METHOD AND APPARATUS FOR COMPOSING VIRTUAL LINKS IN A LABEL SWITCHED NETWORK

ABSTRACT OF THE DISCLOSURE

A method for managing virtual links within a multiple protocol label switched

5   network is provided. According to one aspect of the method, a virtual link which is made up

of a set of links between two devices within the multiple protocol label switched network is

regarded as a single entity by a control component of a label switching router. Each packet to

be transported on the virtual link is labeled based on its assigned forwarding equivalence

class. A specific label is bound to a corresponding forwarding equivalence class. The

10   specific label are used on packets belonging to the same forwarding equivalence class and

such packets can then be forwarded onto any one of the links within the virtual link.

Furthermore, according to another exemplary aspect of the method, each forwarding

equivalence class can be mapped to one of the links within an outgoing virtual link without

changing the output label. This mapping is performed using a selected hash function. The

15   selected hash function is used to map the labels to integers to get a distribution on a smaller

set of links in the virtual link. In addition, according to a further exemplary aspect of the

method, packets with different labels are apportioned among links within the virtual link.

Packets with the same label (hence the same forwarding equivalence class) are forwarded

onto the same link within the virtual link. In order to load balance the various links within

20   the virtual link, different selected hash functions can be used at selected times to apportion

the packets depending on the load conditions. Finally, according to yet another exemplary

aspect of the method, respective hash functions used at the sending and receiving label

switching routers are synchronized. By synchronizing the hash functions, the number of

entries in the load forwarding tables are reduced thereby reducing search time and memory

25   storage requirements.

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